

Patent Claims:

1. Hydraulic power-assisted steering system comprising a steering gear and a hydraulic actuator for assisting actuation of the steering wheel by the driver of a vehicle, in particular a motor vehicle, comprising an electric motor which is coupled to the steering column and used as an additional torque actuator for actively applying an additional steering torque, also consisting of an electronic control and regulating unit (ECU), characterized in that the electronic control and regulating unit (ECU) includes a determination unit for determining a steering torque and an evaluating and selecting circuit, by means of which a total value for applying the additional steering torque is determined in consideration of the determined steering torque or a quantity derived therefrom and a selected basic characteristic curve of steering (basic characteristic curve), and the total value of the additional steering torque to be applied includes a driver-dependent component and a driver-independent component.
2. Power-assisted steering system as claimed in claim 1, characterized in that different predetermined characteristic curves can be selected for varying the application of the additional steering torque.
3. Power-assisted steering system as claimed in claim 1 or claim 2, characterized in that the characteristic curve represents a characteristic curve of amplification conveying the additional steering torque to be applied in

dependence on the steering torque applied by the driver and on an amplification factor.

4. Power-assisted steering system as claimed in any one of claims 1 to 3,
characterized in that different predetermined characteristic curves for the variation of the application of the additional steering torque can be selected by way of a control variable ST that is directly or indirectly predefinable by the driver.
5. Power-assisted steering system as claimed in any one of claims 1 to 4,
characterized in that the electronic control and regulating unit (ECU) is designed redundantly.
6. Power-assisted steering system as claimed in any one of claims 1 to 5,
characterized in that the electric motor is coupled to the steering column by way of a gear, preferably a belt drive.
7. Power-assisted steering system as claimed in any one of claims 1 to 6,
characterized in that the amplification factors of the different characteristic curves are variable in response to the vehicle speed.
8. Power-assisted steering system as claimed in any one of claims 1 to 7,
characterized in that a steering recommendation is given to the driver by means of the driver-independent component.

9. Power-assisted steering system as claimed in any one of claims 1 to 8,
characterized in that the vehicle is stabilized and the vehicle dynamics is enhanced, respectively, by means of the driver-independent component.
10. Power-assisted steering system as claimed in any one of claims 1 to 9,
characterized in that the additional steering torque is adapted to a vehicle course and a roadway course by means of the driver-independent component .
11. Power-assisted steering system as claimed in any one of claims 1 to 10,
characterized in that the variations of the additional steering torque are effected by using a scaling factor λ or an amplification factor V , respectively, according to the relation $V = 1/\lambda$.
12. Power-assisted steering system as claimed in claim 11,
characterized in that the scaling factor λ or amplification factor V (where $V = 1/\lambda$) is limited to a predefined value in a torque-dependent fashion.
13. Power-assisted steering system as claimed in any one of claims 1 to 12,
characterized in that the means for the active application of the additional steering torque are designed as a unit that is arranged as a module at a

steering-wheel-side end portion of the steering valve of a hydraulic power-assisted steering system.

14. Method of controlling a hydraulic power-assisted steering system wherein the actuation of the steering wheel by the driver of a vehicle, in particular a motor vehicle, is assisted by a hydraulic force or pressure and wherein an electric motor which is coupled to the steering column is used as an additional torque actuator for actively applying an additional steering torque by way of an electronic control or regulation of the electric motor, characterized in that a total value of the additional steering torque is determined from a driver-dependent component and a driver-independent component in consideration of the additional steering torque or a quantity derived therefrom and a preselected basic characteristic curve of steering (characteristic curve).
15. Method as claimed in claim 14, characterized in that a variation of the application of the additional steering torque is executed by way of selecting a characteristic curve from several different predetermined characteristic curves.